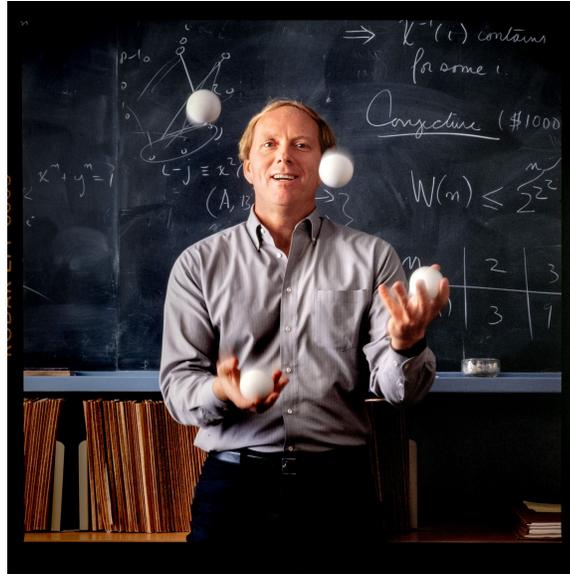


Ronald Louis Graham (1935 - 2020)



Michał Karoński, Founding Editor

On July 6, 2020 Ronald Louis Graham, a member of the Advisory Board of *Random Structures and Algorithms* passed away. World mathematics and the discrete mathematics community, in particular, lost one of its leading figures and great personalities. Ron was a world class mathematician and a man of many talents. A list of his prolific achievements is long and imposing. Here, I would like to say how much we as editors of the journal and Ron's friends and colleagues owe him, revealing his instrumental role in the creation of our journal.

In my memory Ron will always remain as someone who paved the way to publication of *Random Structures and Algorithms* as the very first research journal in probabilistic combinatorics. Let me place it in a historical perspective. In the mid seventies of the 20th century, I had become interested in random graphs, back then a very fresh and rapidly developing area of discrete mathematics. In the next few years, I was fortunate to gather in Poznań a group of young, talented and enthusiastic mathematicians. At that time Poland was still under Soviet domination, emerging from the dark years of martial law which had dramatically ended the Solidarity peaceful revolution of 1980-81. Despite those difficult political circumstances the International Mathematical Union made the decision, considered by many foreign mathematicians as controversial, but for us Poles fortunate, to hold the IMU Congress in Warsaw in 1983. Using this rare opportunity we organized a satellite conference on probabilistic methods in combinatorics. We were lucky to bring to Poznań several mathematicians from all over the world, including Paul Erdős, our "guru" and founding (together with Alfred Rényi) parent of random graphs.

Encouraged by the success of the conference we decided to continue to organize biennial conferences in Poznań. Equally importantly, we came up with an idea of building a more solid platform to exchange results in our area, that is, to create a journal devoted solely to random graphs. In mid 80's I approached with this idea three leading European scientific publishers. Unfortunately, all of them politely rejected our application. Indeed, the area of random graphs was relatively new and, on top of that, my group was coming from a not very well known mathematical center. As it happened, in 1988 Béla Bollobás invited me to speak at the conference organized in Cambridge to celebrate the 75th birthday of Paul Erdős. I met Ron there and had a chance to talk to him about the idea of the journal. Ron immediately expressed his enthusiastic support and declared his willingness to help us to find a publisher in the US. Shortly after the Cambridge meeting I received a message from Maria Taylor from Wiley and Sons that upon recommendation of Ron Graham they were interested in publishing the journal. I have no doubts that without Ron our project would never come to life. Indeed *Random Structures and Algorithms* and the whole area of research covered by the journal owes him a great deal. Thank you Ron!

In the course of next thirty years I met Ron many times. He and Fan visited Poznań on the occasion of RS&A conferences. I spent a few weeks at Bellcore, when Fan was a director of mathematical research group there. The last time I met Ron was in the winter of 2018 in Sweden during Don Knuth's 80th birthday conference. I'll remember him as always looking young for his age, energetic, open, friendly and fun to be around with. We all will miss you Ron.

Joel Spencer, Founding Editor

The mathematician's patterns, like the painter's or the poet's must be beautiful; the ideas, like the colors or the words must fit together in a harmonious way. Beauty is the first test: there is no permanent place in this world for ugly mathematics.

– G.H. Hardy

I met Ron at Bell Labs 1967-8. I had left graduate school and my future path was uncertain. I see now how Ron took me under his wing. I recall him pointing the way toward Turán's Theorem. Ron encouraged me at every step. I owe my career as a mathematician to him.

My experience was multiplied a hundred-fold. Soon after my time at Bell Labs Ron became a supervisor, and later department head for the mathematics department. I watched his encouragement of young talent and his joy in a beautiful proof. Ron embodied the spirit of mathematics. As Ron rose to positions of prominence he always enjoyed speaking of the results of his younger colleagues.

Ron loved Ramsey Theory. We, with Bruce Rothschild, wrote the first book in that area. In 1973 we attended the 60-th birthday conference for Paul Erdős at Lake Balaton, Hungary. Travel to Europe was adventurous in those days, especially behind the Iron Curtain. Uncle Paul, Jarik Nešetřil, Vojtěch Rödl, Vera Sós, Walter Deuber and many others were there. There was an

excitement that a new era – Ramsey Theorems turning to Ramsey Theory – was beginning. Time has proven this correct. Ron led the way with his theorems, his leadership and his deep insights.

In the 1980s a sense was emerging that some large graphs “look like” random graphs. In 1989 Ron, along with Fan Chung and Richard Wilson, made this precise. They defined a sequence of graphs as being *quasirandom*. They gave numerous definitions and showed that they were all equivalent. This robustness was critical. Today their notion of quasirandomness, and its deep extension to graphons, allows us to speak about large graphs (and other discrete structures) in a new and vital way.

At the beginnings of Ron’s career Discrete Mathematics was not held in high esteem. Today it is a powerful turret in the castle of mathematics. Ron, with his leadership role in the national and, later, international mathematics community was a vital part of this transition. Ron would celebrate new results. Szemerédi’s proof on arithmetic progressions (Ron actually wrote the proof!), Kim’s asymptotics for Ramsey $R(3, k)$ (Ron was Kim’s boss at the time!) are only two examples. We owe the standing of Discrete Mathematics in the greater mathematical community to many people – but Ron most certainly played an important role.

Its been a tough year. Elwyn Berlekamp, Richard Guy, John Conway and now Ron Graham. Four men whose pursuit of mathematical truth was marked by great joy and a marvelous playfulness. They are sorely missed. There is now a little less magic in our world.

Noga Alon, Editor-in-Chief

On October 30, 2019 Ron Graham and Fan Chung invited me and my wife Nurit to dinner at their place in La Jolla. Their house features a magnificent ocean view, a vast collection of gadgets for performing magic tricks, and a truly impressive library of mathematical journals. Just before dinner Ron gave me a reprint of the original foundational paper of Erdős and Rényi on the evolution of random graphs. This was one day before Ron’s 84th birthday, which sadly turned out to be his last one.

Ron has been a superb researcher, who obtained fundamental results in Discrete Mathematics focusing on Ramsey Theory and Combinatorial Number Theory, and influential results in the study of scheduling and online algorithms. He served for many years in the advisory board of Random Structures and Algorithms. Not much of his work has been on the probabilistic method, but he has made seminal contributions to many of the topics investigated by probabilistic techniques, and his work on quasirandomness had a profound impact on the subject.

I wrote two joint papers with Ron. Anybody who worked with him or heard him talk about his work, quickly realized that for him doing Mathematics has always been fun. He clearly enjoyed it, and in fact clearly enjoyed lots of other activities. Indeed, he served as the President of the American Mathematical Society, the president of the Mathematical Association of America and the president of the International Jugglers’ Association !

I first met him at a conference in 1984 in Kalamazoo. Ron gave there the Banquet lecture. He started by saying that he realizes everybody must be tired, and he has good news and bad news. The good news is that he only has one slide (this has still been the era of physical slides, with overhead projectors). The bad news, he added, is the size of this slide. Then he unfolded a slide of one by two meters, the topic of the lecture turned out to be the Erdős graph. Ron had on his single slide the names of all the participants in the meeting, as well as the names of some others and much of the induced subgraph of the Erdős graph on this set of roughly 400 vertices. The lecture was absolutely hilarious and yet conveyed the immense impact of Erdős on the development of Discrete Mathematics.

Starting in the mid 80s I visited the research group headed by Ron in Bell Labs multiple times. I served in the panel of the combinatorics section in ICM 94 that he chaired, visited him and Fan in their place in New Jersey and later in California, and met him in conferences in numerous countries. One advantage of being a mathematician, that we sometimes forget, is that we get to meet and befriend interesting people. Even among these interesting people, Ron has been truly unique. I feel lucky I had the opportunity to know him for many years as an admirer of his work and personality, and as a friend.

Andrzej Ruciński, Editor-in-Chief

I must have first met Ron at one of the Hungarian or Czechoslovak combinatorial conferences in the early eighties though I do not recall any meaningful interaction. I do remember quite well meeting Ron at the Random Graphs conference held in Poznań in 1989. He came as an invited speaker and also to appear in “N is a Number”, the movie about Paul Erdős which was partly shot during the meeting. In the movie, you can spot Ron running around the Rosarium in the Citadel park as one of several participants of the Run for a Random Distance. As a born Californian, Ron was a fine athlete who would beat me easily at ping-pong, acrobatics or juggling, if I ever dared to compete. My only chance stood in running and I did not waste it.

Later on, through my friend Vojta Rödl, I had a privilege to get to know Ron a bit closer. Ron invited Vojta and me for a research collaboration twice: in 1997 to AT&T Labs at Murray Hill, NJ, and again in 2000 to UCSD at La Jolla. (In fact, it was Vojta who, known for his travel phobia, suggested taking me along and Ron gladly picked up the check.) These trips resulted in three joint papers, but also gave me a glimpse into Ron’s mind and character.

During the visit in 1997 Ron showed us Tamagotchi, a new Japanese toy with advanced, for its time, AI. His enthusiasm and excitement in playing with it was truly sincere, even boyish. In November 2000, during the famous re-counting of Florida votes, we were invited by Ron and Fan to their unique, semi-circular house which from the street side, due to a ground slope, looked like an earthen mound. In one of a linear sequence of rooms, Ron produced from a shelf a not so big book which turned out to be an encyclopedia of melodies. All melodies of the world (pop songs and classical pieces as well) were classified lexicographically according to the way the initial notes

change; let's say U for up, D for down and S for same. So, one would not need to really know musical notes, just whether the next one is higher or lower or same as the previous one. Ron was a true fan of such little gadgets and did not even try to hide his joy of showing them to his friends.

Ron was in perfect command of his life, though. In 1997, two years before leaving AT&T for West Coast, he revealed to me what his life's rule was: "Wherever you want to be in five years from now, start your preparations today." Ever since, I have been trying to apply this rule to my life.

In 2010, at the age of 75, Ron came to the Emory combinatorial seminar and gave an exciting lecture on permutations inspired by the art of juggling. At some point during the lecture he actually started to juggle a number of balls. I do not remember how many, probably not six as he used to in his youth, but nevertheless it was impressive.

In January 2018, I met Ron for the last time in Piteå, Sweden, during the 80th birthday conference of his close Californian friend, Don Knuth. The scenery was extreme, with daily high temperatures -15 Celsius and sunsets during the lunch breaks. There is a conference photo where you can find him in the middle of the pack looking unlike himself, sad and absent. I like to think that if Ron was following his life's rule to the very end, he surely knew back then where he was heading...

Ron's photograph from 1988

The photograph is reprinted with permission from Peter Vidor, all rights reserved. Mr. Vidor described the scene:

This was shot in 1988 at Bell Labs in Murray Hill NJ, the source of tremendous technological innovation and more than a couple Nobel prizes. It was an enormous complex of laboratories packed with researchers in white labcoats and very serious expressions, huge stainless steel contraptions, general busyness. After about 30 minutes of wandering, mostly lost, through its labyrinthine hallways with an assistant and a hand truck full of photo gear, we somehow blundered at last upon a narrow, long hallway, at the end of which was a solitary open door, booming with Pink Floyd and Dark Side of the Moon. We entered, tentatively, to behold Ron Graham at a modest desk, alone, lost in thought over a pencil and a legal pad covered with figures and notations. Nothing else in that office but some files and the blackboard, featured in this image. He was gracious, funny, and a pleasure to shoot. Wish we'd got him with five balls in the air; he said he could do it.